

USGS Involvement in EPA's Bristol Bay Assessment

The Pebble deposit in southwestern Alaska is the largest unmined copper deposit in the world and also one of the largest of its type – mined or unmined. It also contains significant resources of gold and molybdenum. It is located on state land in a largely undeveloped portion of Alaska in the Bristol Bay watershed that is home to the world's largest sockeye salmon nursery and rearing grounds. The population in the region is mostly limited to a few tribal villages that value their subsistence lifestyles. The Pebble deposit is currently owned by the Pebble Partnership (<http://www.pebblepartnership.com/>), a joint venture between Northern Dynasty Minerals and Anglo American. The Pebble Partnership has been conducting the requisite environmental and engineering studies at the site for several years to position themselves to submit applications for permits to mine this world class deposit.

In response to concerns from federally recognized tribes and others who petitioned the agency about the potential impact of mining on the fishery, EPA initiated a scientific assessment (<http://yosemite.epa.gov/R10/ecocomm.nsf/bristol+bay/bristolbay>) of the Bristol Bay watershed to understand how large-scale development would affect water quality and habitat in the watershed. Mining was identified as one of the most likely types of large-scale development, in part, because of the advanced stage of exploration at the Pebble deposit. Robert Seal, a research geologist with the Eastern Mineral and Environmental Resources Science Center in Reston, was invited to participate in this assessment exercise because of his recognized expertise in the environmental aspects of mining. EPA's assessment team includes staff from EPA, private consultants contracted by EPA, academics from universities in Alaska and the Pacific Northwest with expertise in fisheries and subsistence lifestyles, and scientists from USFWS, and NOAA. Seal is the only USGS participant. The scientific assessment is intended to provide the scientific background to allow the EPA management to decide if sufficient information is available to justify the use of EPA's 404c veto authority under the Clean Water Act to ban mining of the Pebble deposit.

The Bristol Bay assessment report will be a multidisciplinary document (several hundred pages long) covering a range of topics including fishery management and biology, fishery economics, subsistence lifestyles, hydrology, economic geology, environmental geochemistry, mine engineering, seismic risk assessment, and ecological risk assessment. Original plans were to include all team members as authors on the large report. Seal notified EPA (in July 2011) of the USGS requirements for scientific peer review of reports by USGS scientists, and of the challenges of getting a large multidisciplinary document reviewed within EPA's limited time constraints. As an alternative, it was decided that Seal's contributions to the assessment would be written up as a solely authored (by Seal) appendix to the main document, focusing on economic geology and environmental geochemistry of porphyry copper deposits. This appendix reports data specific to the Bristol Bay watershed but also represents a expansion of a recently published porphyry copper mineral deposit model report for which Seal was a coauthor (<http://pubs.usgs.gov/sir/2010/5070/b/>). Seal will not be a coauthor on the main report, but will be listed as a member of the assessment team. The main report will then cite this "stand alone" appendix by Seal. The appendix will be submitted for USGS peer review shortly. To date, EPA has been working with a draft of this appendix. This approach will clearly identify the USGS contribution to the assessment, but detaches the USGS from any interpretations that EPA may make with this information. The USFWS is taking a similar approach for their contributions to the assessments. It is unclear what NOAA is doing.

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